## REMARKS

Applicants respectfully request reconsideration of the present application in view of the foregoing amendments and in view of the reasons that follow.

***Status of Claims:***

No claims are currently being cancelled.

Claim 19 is currently being amended.

Claims 58-61 are currently being added.

This amendment and reply amends and adds claims in this application. A detailed listing of all claims that are, or were, in the application, irrespective of whether the claim remain under examination in the application, is presented, with an appropriate defined status identifier.

After amending and adding the claims as set forth above, claims 1-40 and 42-61 are now pending in this application.

***Indication of Allowable Subject Matter:***

Applicants appreciate the indication of allowable subject matter made in the Office Action with respect to claims 7, 28,46 and 54.

***Claim Rejections – Prior Art:***

In the Office Action, claims 1, 3-5, 8-11, 42-45, 47-53 and 55-57 were rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 5,770,028 to Maley et al.; claims 1, 3-5, 8-11, 42-45, 47-53 and 55-57 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Maley et al. in view of U.S. Patent No. 4,970,145 to Bennetto et al.; claim 6 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Maley et al. in view of Bennetto et al. and further in view of U.S. Patent No. 6,528,020 to Dai et al.; claims 1-3, 6, 10, 12-24, 27, 31 and 33-40 were rejected U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 5,571,401 to Lewis et al. in view of Dai et al. and Bennetto et al.; claims 25, 26 and 30 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Lewis et al. in view of Dai et al. and further in view of U.S. Patent No. 6,315,956 to Foulger et al.; and claims 1, 3, 6 and 10 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Dai et al. in view of Bennetto et al. These rejections are traversed with respect to the presently pending claims under rejection, for at least the reasons given below.

***Dai and Maley***:

Neither Dai nor Maley discloses or suggests that at least one organic group is covalently bonded to conductive modified particles, as recited in presently pending independent claims 1, 19, 22 and 38. In this regard, Dai describes the use of nanotubes to make his sensor more sensitive, and detects chemical reactions that cause changes in his nanotubes. No covalent bonding of organic groups to conductive particles is disclosed or suggested by Dai. Maley also describes a sensor which detects changes in a sensor due to chemical reactions of components in the sensor with an analyte. No covalent bonding of organic groups to conductive particles is disclosed or suggested by Maley.

On pages 5 and 6 and 9 of the Office Action, it appears to recognize that there are differences between the claimed invention and the teachings of the cited art of record, but whereby the Office Action asserts that the prior art is structurally the same as the claimed invention, irrespective as to different functional features that are claimed, since those functional features are not given much (if any) patentable weight. In reply, claim 1 recites at least one organic group **covalently bonded** to the particles, whereby no such structural features are taught or suggested by the cited art of record.

It appears that the Office Action may be relying on Bennetto for disclosing at least one organic group **covalently bonded** to the particles, but this reliance is incorrect. Rather, Bennetto descries immobilized enzyme electrodes, in which an enzyme is adsorbed or immobilized and includes a substantially heterogeneous layer of resin-bonded carbon or graphite particles. Claim 14 of Bennetto describes that the enzyme is immobilized by covalent bonding or cross-linking of the enzyme on the surfaces. However, the surfaces do not correspond to conductive modified particles, as explicitly recited in independent claims 1, 19, 22 and 38.

Accordingly, since none of the other cited art record makes up for these deficiencies of Dai and Maley and Bennetto, independent claims 1, 19, 22 and 38 are patentable over the cited art of record.

With respect to independent claims 42 and 50, which recite that "the change in the preexisting resistance is due to a change in the electrical properties across more than one of the conductive modified particles within the layer" (emphasis added), Maley is directed to chemical reactions between an analyte and a sensor array that contains conductive particles, in

order to change characteristics of each of the conductive particles, and whereby the changed conductive characteristics of the chemically-changed conductive particles is then measured. This operation of a sensor is clearly different from the features of independent claims 42 and 50, in which the change in the preexisting resistance is due to a change in the electrical properties across more than one of the conductive particles (e.g., due to two adjacent conductive particles being moved further away from each other when the analyte is introduced to the sensor). Accordingly, since Bennetto does not rectify the above-mentioned deficiencies of Maley, independent claims 42 and 50 are patentable over the cited art of record.

With respect to dependent claims 43 and 51, those claims recite that the at least one organic group is covalently attached to the particles. Maley does not disclose or suggest a covalent attachment of an organic group to a conductive modified particle. Accordingly, since Bennetto does not rectify the above-mentioned deficiencies of Maley, dependent claims 43 and 51 are patentable over the cited art of record.

With respect to dependent claims 44, 45, 52 and 53, these claims recite features of the at least one organic group, whereby support for that new claim may be found on pages 15 and 16 of the specification. The specific organic groups recited in new claims 44, 45, 52 and 53 are not taught or suggested by Maley or by Bennetto, alone or in combination.

Still further, the specific organic groups (that are attached to the conductive modified particles) recited dependent claims 48, 49, 56 and 57 are not disclosed or suggested by Maley or by Bennetto, alone or in combination.

With respect to dependent claims 47 and 55, as discussed above, Maley is directed to chemical reactions between an analyte and a sensor array that contains conductive particles, which is clearly different from the present invention that is directed to physical changes in the sensor array and not due to chemical reactions between analytes and conductive particles. Dependent claims 47 and 55 recite that conductivity between the conductive modified particles within the layer changes due primarily to particle-to-particle distance changes between the conductive modified particles within the layer when the analyte is introduced to the sensor, and wherein the preexisting resistance of the layer changes accordingly. Such features are not taught or Maley or by Bennetto, alone or in combination.

***Lewis:***

With respect to the rejection of claims 1-3, 6, 10, 12-26, 27, 30, 31 and 33-40 based in part on the teachings of Lewis, while Lewis's sensor array detects changes in physical properties of conductive particles, one of ordinary skill in the art would not be motivated to utilize features of a first sensor array that relies on chemical reactions between an analyte and conductive particles, with features of a second sensor array that relies on physical changes in conductive particles, since those two sensor arrays operate much differently from each other. Accordingly, the purported combination of Lewis, Bennetto and Dai would not be made by one skilled in the art, without hindsight knowledge of the present invention. Contrary to the assertions made in the Office Action, Dai is directed to sensors in which chemical changes in conductive particles are measured, and not in which physical changes in the relationship between conductive particles are measured (or occur for that matter). Accordingly, the purported combination of Lewis, Bennetto and Dai (whereby Applicants do not believe that one skilled in the art would make such a combination in any sense) does not teach or suggest the features recited in independent claims 42 and 50. Also, neither Lewis, Dai nor Bennetto, alone or in combination, teaches a covalent bonding of an organic group to a conductive modified particle, as specifically recited in independent claims 1, 19, 22 and 38. It is noted that Foulger and Maley do not rectify the above-mentioned deficiencies of Lewis, Dai and Bennetto, and thus all of the presently pending claims are patentable over the cited art of record.

***New Claims:***

New claims 58-61 have been added to recite "swelling" features of the layer comprising conductive modified particles, whereby none of the cited art of record teaches or suggests such swelling. See page 6 of the specification for support for these new claims.

**Conclusion:**

Since all of the issues raised in the Office Action have been addressed in this Amendment and Reply, Applicants believe that the present application is now in condition for allowance, and an early indication of allowance is respectfully requested.

The Examiner is invited to contact the undersigned by telephone if it is felt that a telephone interview would advance the prosecution of the present application.

The Commissioner is hereby authorized to charge any additional fees which may be required regarding this application under 37 C.F.R. §§ 1.16-1.17, or credit any overpayment, to Deposit Account No. 19-0741. Should no proper payment be enclosed herewith, as by a check or credit card payment form being in the wrong amount, unsigned, post-dated, otherwise improper or informal or even entirely missing, the Commissioner is authorized to charge the unpaid amount to Deposit Account No. 19-0741. If any extensions of time are needed for timely acceptance of papers submitted herewith, Applicants hereby petition for such extension under 37 C.F.R. §1.136 and authorize payment of any such extensions fees to Deposit Account No. 19-0741.

Respectfully submitted,

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